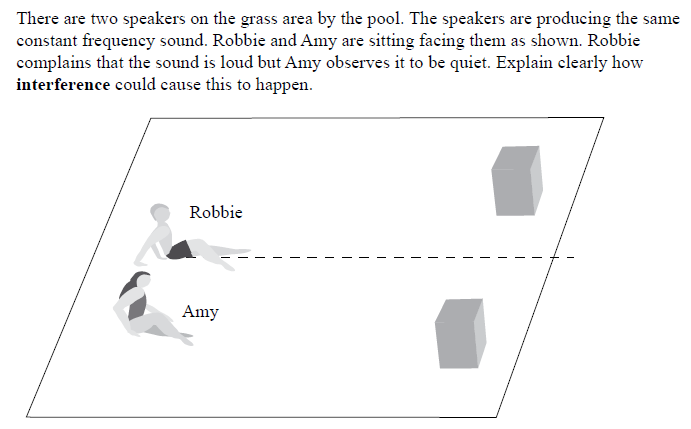
**Interference Pattern NCEA Examples**

**NCEA 2005**

**Question:**

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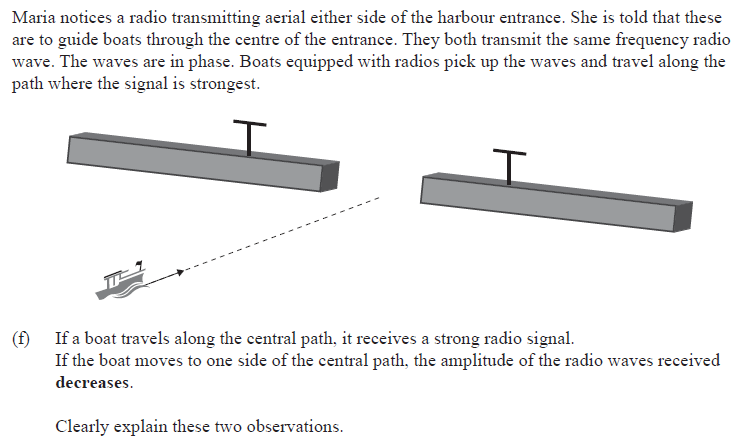
**Answer:**

Robbie is at an antinode. The waves from the two speakers arrive in phase causing constructive interference. This causes a loud sound. Amy is at a node. The waves from the two speakers arrive out of phase causing destructive interference. This causes a quiet sound.

|  |  |  |
| --- | --- | --- |
| **Achieved** | **Merit** | **Excellence** |
| Correctly describes nodes **or** antinodes causing loud / quiet.  **OR**  Correct reference to constructive **or** destructive interference. | Correctly describes nodes **and** antinodes causing loud / quiet.  **OR**  Correct reference to constructive **and** destructive interference. | Correctly describes nodes **and** antinodes causing loud / quiet.  **AND**  Robbie is at an antinode (constructive interference) **and** Amy is at a node (destructive interference). |

**NCEA 2007**

**Question:**

****

**Answer:**

On the central antinode, the boat is equidistant from both sources. Path difference equals zero, waves arrive in phase and add constructively producing a large amplitude. Off to one side, waves travel further from one aerial, path difference equals half wavelength, they arrive out of phase, add destructively, small amplitude.

|  |  |  |
| --- | --- | --- |
| **Achieved** | **Merit** | **Excellence** |
| Links observations to interference. | Correctly explains node (destructive, out of phase)  **OR**  Antinode (constructive, in phase) behaviour. | Correctly explains node (destructive, out of phase)  **AND**  Antinode (constructive, in phase) behaviour. |